NASA'S MISSION TO PLANET EARTH
EARTH PROBES
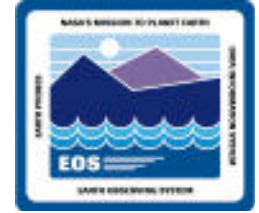DATA INFORMATION SYSTEM
EOS
EARTH OBSERVING SYSTEM

Illustra Selection and Use

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Overview

Illustra evaluated and selected for use as the Release B Science Data Server baseline

- **Integrates spatial query searching and data management in the database engine**
- **Provides extensibility through user defined datatypes and operations**
- **Mitigates technical risk**

Encapsulation designed in Release A enables a smoother technical transition for from one DBMS to another and contains cost

Selection of Illustra for use in Release B will be validated via benchmark comparisons

ECS Context

- **Provides the COTS DBMS repository for the SDSRV metadata**

Scenario Context

- **Provides the spatio-temporal results for a coincidence search**

Design Drivers

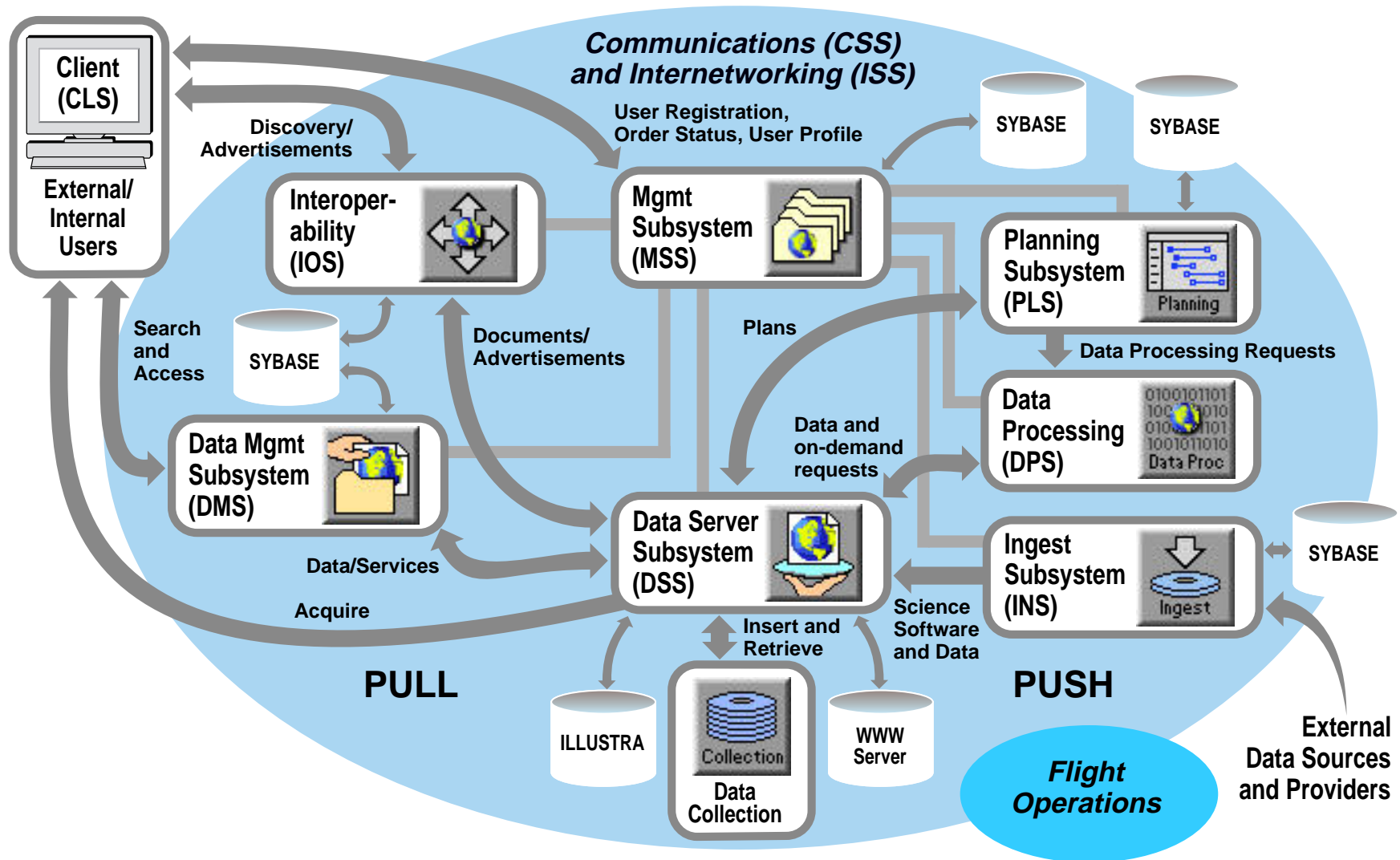**Driving Requirements**

- **Evolutionary Extensibility**

- **Performance/scalability**

- **Minimize impact to Release A software above the database wrapper classes**

- **Change database-dependent software (i.e., software below the database wrappers) to utilize Illustra features and minimize schedule risk**

    - **schema**

    - **data type functions**

    - **data loads/reloads**
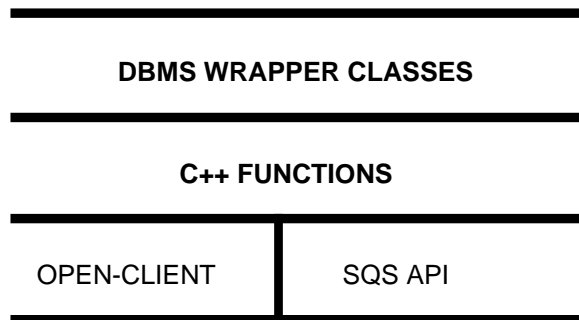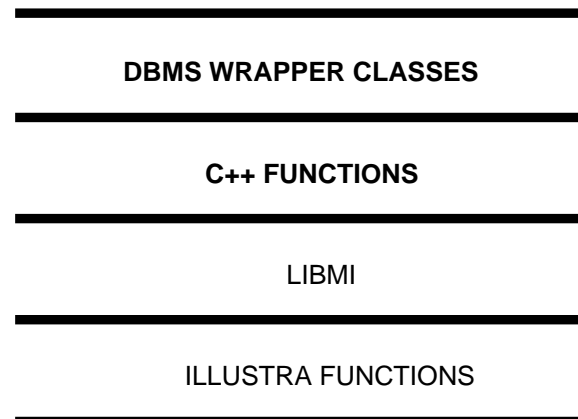
    - **stored procedures**

ECS COTS DBMS Context

Communications (CSS) and Internetworking (ISS)

Client (CLS)

External/Internal Users

Discovery/Advertisements

User Registration, Order Status, User Profile

SYBASE

SYBASE

Interoperability (IOS)

Mgmt Subsystem (MSS)

Planning Subsystem (PLS)

Search and Access

SYBASE

Documents/Advertisements

Plans

Data Processing Requests

Data Mgmt Subsystem (DMS)

Data and on-demand requests

Data Processing (DPS)

Data Server Subsystem (DSS)

Ingest Subsystem (INS)

SYBASE

Data/Services

Acquire

Science Software and Data

PULL

PUSH

Insert and Retrieve

ILLUSTRA

Collection

Data Collection

WWW Server

Flight Operations

External Data Sources and Providers

Software Design Transition

RELEASE A DB ACCESS ARCHITECTURE

DBMS WRAPPER CLASSES

C++ FUNCTIONS

OPEN-CLIENT	SQS API

RELEASE B DB ACCESS ARCHITECTURE

DBMS WRAPPER CLASSES

C++ FUNCTIONS

LIBMI

ILLUSTRA FUNCTIONS

APPLICATION CLIENT

- -

COTS DBMS SERVER

SYBASE STORED PROCEDURES

ILLUSTRA FUNCTIONS

Evolutionary Features

Future Enhancements

- **Definition of user datatypes and operations that can be linked into the DBMS server**

Scalability

- **Multi-threading of Illustra server vs. a server per connection**

Current Status

COTS Selections

- **Met with Illustra to review progress toward delivery of product enhancement specification and implementation**

Prototypes

- **Parallel development of Release A functionality using Illustra**
- **Perform benchmarks on representative set of Release A queries/updates to verify SDSRV COTS DBMS selection for Release B.**

Next Steps

- **Evaluate use of the Text DataBlade for the Document Data Server**
- **Review current conceptual object data model and Release A physical schema to determine schema change impacts along with a more detailed categorization of the types of changes that are likely to occur**
- **Develop technical migration process**
- **Complete Sybase to Illustra migration management plan**

Summary

Illustra is the Release B SDSRV COTS DBMS baseline for metadata

Illustra continues to be risk mitigation for Release A SDSRV

Work continues to focus on the migration approach from Sybase to Illustra:

- Minimize impact (if any) to Release A software above the database wrapper class

- Determine technical and schedule approach for migration

- Determine whether to leave the schema in a relational form or migrate to an object implementation

Illustra training to begin in November

Refine SOW with Illustra to ensure that desired enhancements are made in accordance with the Release B schedule and requirements